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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/720,838	11/24/2003	Mickael Gros-Jean	02-GR1-323	3616

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FLEIT, KAIN, GIBBONS, GUTMAN, BONGINI  
& BIANCO P.L.  
ONE BOCA COMMERCE CENTER  
551 NORTHWEST 77TH STREET, SUITE 111  
BOCA RATON, FL 33487

EXAMINER

CHEN, BRET P

ART UNIT PAPER NUMBER

1762

DATE MAILED: 06/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/720,838

Applicant(s)

GROS-JEAN ET AL.

Examiner

B. Chen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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### **DETAILED ACTION**

Claims 1-15 are pending in this application. Deleted claims 16-39 are noted.

The amendment to the claims has been entered. In view of said amendment, the restriction requirement has been withdrawn.

### ***Specification***

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

It is noted that the claimed invention is directed solely to a method. The examiner suggests amending the title to reflect same.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 7, the limitation “between 0.1 second and 10 minutes, for example of the order of 1 to 10 seconds” is deemed vague and indefinite. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board

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of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 7 recites the broad recitation of 0.1 second and 10 minutes, and the claim also recites 1 to 10 seconds which is the narrower statement of the range/limitation.

In claim 10, the limitation that the metallic material be "titanium nitride" or "tantalum nitride" is deemed vague and confusing as nitrides are not metallic materials. Clarification and appropriate amendments, if necessary, are requested.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vaartstra (6,784,049) or Hintermaier (6,787,186), or Senzaki et al. (6,616,972).**

Vaartstra discloses a method of forming a refractory metal oxide layer, preferably tantalum pentoxide, on a substrate using a reactive deposition process with a refractory metal precursor compound with an ether for use in integrated circuit manufacturing (col.1 lines 7-24) by chemical vapor deposition or atomic layer deposition (col.3 lines 35-37). The substrate can be a silicon wafer (col.3 lines 3-6) as well as other materials (col.3 lines 45-50). The precursor can be a host of organic materials (col.6 line 33 – col.8 line 19). Preferred embodiments include a deposition temperature of about 100°C to about 600°C, more preferably in the range of about 200°C to about 500°C; the deposition chamber pressure is preferably maintained at a deposition pressure of about 0.1 torr to about 10 torr; and the partial pressure of precursor compounds in the inert carrier gas is preferably about 0.001 torr to about 10 torr (col.9 lines 37-45).

Hintermaier discloses a method of forming a metal oxide ceramic layer on a substrate by CVD is provided, comprising conducting a gaseous flow of a vaporized solution of a precursor organo metal compound in a volatile organic solvent such as an oxidizing gas, in the presence of a protonating additive substance in gaseous state, into contact with a surface portion of the substrate under a vacuum pressure at a thermal decomposition temperature effective for converting the precursor compound to its corresponding metal oxide (col.2 line 61 – col.3 line 4). The decomposition temperature may be about 150-800 °C ; the vacuum pressure may be about 0.01-100 Torr; and the substrate may be silicon (col.3 lines 35-40). The precursors can be a variety of organo metal compounds (col.3 line 57 – col.6 line 57) and the deposited material can be tantalum pentoxide (col.4 line 54 – col.5 line 4).

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Senzaki discloses a method for producing a metal oxide material comprising such as tantalum oxide by reacting a first reactant selected from the group consisting of (R.sup.1 R.sup.2 N).sub.x M(.dbd.NR.sup.3).sub.y, (R.sup.4 R.sup.5 N).sub.x M[.eta..sup.2 --R.sup.6 N.dbd.C (R.sup.7)(R.sup.8)].sub.y and mixtures thereof with an oxidant (col.2 lines 41-55). A host of organic materials can be used as precursors (col.3 line 8 – col.4 line 32). The pressure can be from 1 mTorr to 760 Torr; the temperature can be from 200°C to 600°C; and the substrate can be silicon (col.2 line 66 – col.3 line 3).

However, all three references fail to teach the claimed precursor. It is noted that each reference teaches the conventionality of using an organic precursor to form a metal oxide film. It would have been obvious to utilize the claimed precursor with the expectation of obtaining similar results as Vaarstra, Hintermaier, and Senzaki teach the successful deposition of utilizing a variety of organometallic precursors.

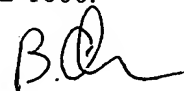
The limitations of claims 2-15 have been addressed above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to B. Chen whose telephone number is (571) 272-1417. The examiner can normally be reached on 7:30am - 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bc  
6/4/06



**BRET CHEN**  
**PRIMARY EXAMINER**